# The two faces of medical education: Flexner and Osler revisited

**A I Tauber** MD FACP *Boston University School of Medicine, 80 East Concord Street, Boston, MA 02118, USA*

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'If the notion had prevailed that a qualified physician could be prepared only by the process of rigorous self-denial, with a specified and rigid regimen of study and interests, we might have swamped our medical schools, and ultimately society, with automatons. However, we have been taught that certain humanistic values and skills are essential in our development as physicians . . . Possibly, a physician who takes the time to look and even see beyond his stethoscope might discover basic maladies affecting his patient's world also in need of attention.'[1]

## The new curricula

My medical school is in the midst of changing its curriculum. The effort to move such a behemoth was considerable, but the pressures to alter a course of study, essentially unchanged since the beginning of the century, were compelling. We are now committed to a new emphasis on ambulatory clinical training during the 3rd and 4th years, and an expansion of sociological sensitization in the pre-clinical years to assure the student's appreciation of the non-scientific doctor-patient encounter, ie ethics, interpersonal dynamics, socio-economic issues, etc. The new orientation is probably best represented by the report of 'The Panel on the General Professional Education of the Physician and College Preparation for Medicine' (GPEP)[2]. Sponsored by the Association of American Medical Colleges, the 1984 report is explicitly concerned with the integrity and personal concerns of the patient in the face of expanding technology, increasing specialization, the restructuring of health service organizations along corporate lines, and an 'accelerating' erosion of general education for physicians. The recommendations of the GPEP are presented in the form of five major conclusions:

(1) A general professional education, beginning in college and continuing through the initial years of residency, is necessary to develop effective analytic and diagnostic skills, as well as to instill values which promote respect and concern for patients. This includes placing greater emphasis on the role of health promotion and disease prevention in medical education curricula. (2) Current admissions practices should encourage a broad-based baccalaureate education by requiring studies in the humanities, social sciences, as well as the natural sciences. (3) Pedagogic emphasis should be applied to enhance critical thinking, which is more pertinent to the education of physicians than the mastery of current techniques. Lectures are to be minimized and independent learning encouraged. (4) Clinical clerkships should be carefully structured to reinforce values of concern and respect for patients. Therefore students must encounter the broadest spectrum of disease and take general electives, rather than concentrating prematurely on specialty fellowships. Integration of fundamental scientific concepts into clinical problem solving is crucial to this general orientation. (5) Education, as a professional goal of the medical faculty, must be rewarded.

The GPEP report may eventually be viewed as a crucial catalyst for altering not only the way we teach medicine, but more fundamentally, how the physician delivers care. We are perhaps witnessing a basic restructuring in the doctor-patient relationship. This essay explores the historical origins of the GPEP report, so that we might step back from our new enthusiasm and consider the potential traps into which medical educators might fall. Each age has its ideals to which the physician model aspires. But our history clearly shows us that only by careful scrutiny to maintain a balanced view, will we free ourselves from damaging assumptions and myopic restrictions. Thus a warning is offered. So, if we are in the midst of some significant shift, what in fact are we changing?

## The Flexner Report

The pre-GPEP standard for medical education was established in the first decade of this century, as encapsulated in the Flexner report of 1910[3]. This famous Bulletin Number Four of the Carnegie Foundation was commissioned following the AMA's Council on Medical Education had surveyed and classified the nation's medical schools in a report published in 1907. Because of the seeming self-interest of the AMA to insist on orthodox (ie scientific) medical education and practice, the Carnegie Foundation for the Advancement of Teaching was asked to conduct an independent study, which was entrusted to Abraham Flexner, an educator, with neither medical nor scientific training. Flexner reports in his autobiography that he visited 155 schools in the United States and Canada, and 'at each stop, within a few hours, obtained a reliable estimate respecting the possibilities of teaching modern medicine'[4]. His interviews were pointed and the issues well defined: what were the entrance requirements, size and training of faculty, budget, laboratory training offered, and the relationship between the medical school and affiliated hospitals?

Flexner was criticized for his superficial survey, cavalier attitude, and narrow basis of what constituted appropriate standards[5]. Despite a natural defensiveness on the part of the medical schools, Flexner completed his study with the compelling justification that they were public service corporations, open to scrutiny and subject to professional criticism. Heretofore however there had been no imposed

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standard, but as Henry Pritchard, President of the Foundation intoned,

'as a man is to practice medicine, the public is equally concerned in his right preparation for that profession, whatever he call himself - allopath, homeopath, eclectic, osteopath, or whatnot. It is equally clear that he should be grounded in the fundamental sciences upon which medicine rests, whether he practices under one name or under another.'[3] (p viii)

Now the AMA, with the help of the Carnegie Foundation would dictate the appropriate standards, to which Flexner could summarily appraise each institution.

The report concluded that (1) there were too many physicians (3-4 times that needed), (2) most practitioners were ill trained, (3) because of rising costs to provide an adequate laboratory-based education, most institutions were deemed inadequately financed, and (4) hospitals, because of their teaching role must be placed under similar scrutiny and adherence to the highest educational standards. The solution was to either close or radically reform sub-standard schools, produce fewer doctors (to assure a high socio-economic standard and thereby attract the best and brightest)*, and coordinate medical education at the university level, insisting on a prescribed curriculum to prepare physicians for scientific medicine.

Some have viewed the consequences of the Flexner report as 'drastic'[6], others as only the watershed of a process already well underway[5,7]. Between 1904 and 1909, 44 schools had closed, and within the next decade, there was a further precipitous drop in schools (131 to 81) and students (4400-2529)[5-7]. At this time, truly unacceptable medical schools, whose students accounted for less than 10% of those passing licensing exams, were playing an unimportant role in educating physicians. These graduates had no significant impact on the overall quality of medical care and little effect on competition among physicians[5]. Flexner had another agenda than simply eliminating sub-standard institutions. The registration of medical schools with the Association of American Medical Colleges, the imposition of state licensing linked to such accreditation, the development of a model medical school at Johns Hopkins, and finally the effective use of philanthropic foundation support (eg Rockefeller, Carnegie) helped mould American medical standards closely to those advocated by Flexner[7,8]. The 20th century doctor was to be an active and sceptical medical scientist. There was a pervasive scientific ethos[3]:

[M]edicine is part and parcel of modern science. The human body belongs to the animal world. (p 53)

Is there any logical incompatibility between the science and the practice of medicine? (p 54)

Investigation and practice are thus one in spirit, method and object. (p 56)

The recommended curriculum extended to a 2-year requirement for undergraduate training in biology, chemistry and physics, followed by the basic medical sciences in the first 2 medical school years followed by 2 years of clinical training as suggested by the AMA Council report: medicine, surgery, obstetrics, gynaecology, otolaryngology, ophthalmology, dermatology, syphilis, hygiene and medical jurisprudence. The omission of psychiatry is particularly interesting, and of course there is no mention of any of the issues viewed so prominently in the 1984 GPEP report. This is not to say that Flexner's report was not circumspect regarding the promise of rigorous application of scientific principles†, but it explicitly endorsed a particular ideal of science as the basis of medical training, and by extension, markedly influenced how physicians might view their patients. The relationship of medicine to science is a most complex historical and sociological issue[9], but clearly the Flexner report endorsed an optimistic reliance on the application of basic research. The emphasis on the laboratory, the heavy reliance on the objective, ie quantifiable data, the overwhelming concern with disease as a malfunctioned component (as opposed to holistic health concerns) oriented the Flexnarian physician increasingly towards a technocracy.

Few would argue that the Flexner report was unjustified in applying rigorous academic standards to the training of physicians, but critics have amply identified how the Report restricted the legitimacy of a broad purview of issues crucial to effective ministration to the sick[10]. Flexner's orientation in many respects was firmly implanted ideologically in one direction, when in fact other options might have been included to guide the training of physicians. Appraising Flexner's role has fluctuated to the extent that historical changes have altered that orientation[10], and the GPEP report is an important response to those changed attitudes. In fact the debate was in full array at the time the Flexner report was published.

## Laboratory versus bedside

Flexner was heavily indebted to the earlier report of the AMA's Council on Medical Education report of 1907. The Carnegie Foundation's chairman, Henry S Pritchett had been solicited by the Council's chairman, Arthur Dean Bevan, to verify their recommendations. Pritchett chose Flexner. The interlocking directorship was further strengthened by N P Colwell, the Council's secretary, who accompanied Flexner on most of his visits and the close relationship of Abraham Flexner with his brother Simon, director of the Rockefeller Institute for Medical Research, the leading biomedical facility of its kind[11]. Finally, Flexner's medical school model was his alma mater, Johns Hopkins, whose Dean, William H Welch, had become President of the AMA. (Welch and Simon Flexner had co-authored a report for the Rockefeller Foundation in 1907 that seems to have been incorporated later

*'[We] cannot provide laboratory and bedside instruction on the one hand, and admit crude, untrained boys on the other . . . The combination is at once illogical and futile.' (p 22)[3]

†'That the mechanical standpoint has richly justified itself is indisputable; nevertheless, so far as concerns medical education, it is not yet ready wholly to absorb the functional point of view. An unbridged gap exists. Whether the physical sciences will ever so far refine their procedure as altogether to resolve function in mechanical terms, it is needless here to discuss. Such an outcome is at any rate more distant than the early investigators, in the first flush of their splendid successes, supposed.' (pp 62-63)[3]

in Flexner's 1910 report[12].) These relationships are important in order to understand the orientation of the Flexner report and its more obscure origins, the most important being William Welch.

Welch, of all these medical politicians, was best known as a staunch supporter of German reductionism. Having studied bacteriology in Germany, Welch viewed clinical medicine as a scientific discipline to be taught by famous scientists[13]. Aside from advocating a strong background in basic science, he assumed the more extreme view that clinical medicine was but a branch of pathophysiology and that the vector of interest was from laboratory to bedside. The optimism of a severe reductionism originated from the research programme proclaimed in the 1840s by Hermann Helmholtz (along with Emil DuBois-Reymond, Carl Ludwig and Ernst Brucke), who sought to purge biology of vitalism. The reductionist position, formed in late 1841, first fully expressed by Helmholtz in 1847, who led the attack with his studies of how material exchange takes place in the body[14]. In measuring, through careful quantitative technique, heat generation by contracting muscle, he demonstrated conversion and conservation of energy; Helmholtz thus strictly applied the same laws of inorganic chemistry and physics to organic processes[15]. The reductionists did not argue that certain organic phenomena were not unique, but only that all causes must have certain elements in common. They connected biology and physics by equating the ultimate basis of their respective explanations. It was a subtle argument, but powerful and successful in eventually sweeping other strategies aside. (This articulated programme was only another salvo in the continuing struggle between holists and atomists that long pre-dated both Helmholtz, ie to Robert Boyle, followed by Hermann Boerhaave.) Reductionism served as the intellectual ideal of Welch's medical school, although the training process of American physicians imbued with scienticism assumed a distinct character[16].

Welch's position was rigorously opposed in his very institution by William Osler, who idealized the opposite pole of medicine's foundation: the crucial vector was from bedside to the laboratory. Osler essentially rejected the Flexner report[17], warning against the appointment of faculty based on research accomplishments as opposed to interests in students and patients, both because of the danger of diverting students to the laboratory and the purported inadequacy of scientists as clinical teachers. In his view, researchers should be in research institutions and not corrupt the clinical interaction. He was not opposed to scientific objectivity applied to medicine, but rigorously resisted a scientific ethos imposing itself between physician and patient.

Flexner's ideological position was argued at the highest levels of medical academic politics[18]. The debate obviously ensued as a result of the practical advances made in bacteriology and the obvious scientific implications of new technology available to microbiology, the public health and surgical advances resulting from new principles of hygiene, and the birth of serology as another laboratory-based diagnostic advance that literally redefined nosography[19]. Whereas Osler took the extreme position that medicine could only be learned at the bedside, albeit supported by the autopsy and laboratory, by 1911, the Interurban Club (founded by Osler in 1905) debated how to merge the two poles of argument in an ideal of clinical investigation[18]. Rufus Cole, then director of the Johns Hopkins Hospital, argued for a hybrid, crossing the English model of hospital-based research with the German laboratory. Hospitals might provide physicians with laboratory space so that medical students might function in both worlds. The American Society for Clinical Investigation, founded by Samuel Meltzer in 1908, advocated this ideal, as did the founding of the Rockefeller Institute and numerous hospital-based laboratories, which the Rockefeller Foundation promoted by insisting on a full-time clinical faculty, whose research activities served as the foundation of their academic pursuits[7].

The effectiveness of this so-called hybrid is apparent, as it served as the model of academic medical pursuits throughout the 20th century. But critics have challenged the emergent order. On one level, continued debate revolved about the centrality of patient versus laboratory, ie the issue of application of basic science to clinical medicine. That issue was a concern of investigative strategy, and only reflected at best a more fundamental concern. Already in 1922, Francis Peabody, Chairman of the Harvard Medical Service at the Boston City Hospital, warned 'the laboratory never can become and never should become the predominating factor in the practice of medicine'[20]. And he was dismayed at the prospect that the 'medical schools and teaching hospitals are producing "laboratory men" instead of clinicians'[20]. He later wrote a short guide to the doctor-patient relationship[21], an epistle which reveals the significant weakness of the Flexner report and all of its intellectual appendages. The question was basic to the physician's identity.

## The new physician

The Flexner report, with its sole reliance on a reductionist science to serve as an ideal for medicine, essentially omits the dynamic, or sociological encounter between patient and physician[11]. As Peabody wrote,

> When one considers . . . the enormous mass of scientific material which must be made available to the modern physician, it is not surprising that the schools have tended to concern themselves more and more with this phase of the educational problem. And while they have been absorbed in the difficult task of digesting and correlating new knowledge, it has been easy to overlook the fact that the application of the principle of science to the diagnosis and treatment of disease is only one limited aspect of medical practice.[21] (pp 9-10)

And he concludes, 'One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient' (p 48)[21]. Written 65 years ago, one might argue that the triumph of scientific medicine places such an evaluation in jeopardy. The GPEP report concludes otherwise. The genesis and history of that document would further illuminate the contrast between Welch and Peabody already exemplified in 1922, but our concern is to consider the portrait of a physician trained as a composite of the Welch and Peabody ideals. The flush of promise heralded by the advances in biomedicine during the 1875-1910 period, inspired Welch, Cole and the Flexners confidently to assert a scientific basis for medical training, and ultimately, practice. That aspiration was a powerful model that soon gained ascendency, but in the process, Osler

and Peabody recognized the danger of reducing the patient to simply a pathophysiology characterized by laboratory tests. The GPEP report attempts to encompass both positions by consciously fusing scientific medicine onto a heightened sensibility for the patient's entire social and psychic context. (An implicit critique of sole reliance on diagnostic data as the basis of the doctor's actions and relation to his patient is the reactive component to the Flexner argument.) Such an interaction demands a self-referential locus and this is the crux of challenge to the physician of the 21st century.

Science purports to espouse a detached relationship between the subject (scientist) and its object. We know, as did Goethe at the end of the 18th century[22], that such an ideal is both psychologically and philosophically problematic, but nevertheless scientific detachment must remain a standard in order to avoid the contaminating influence of subjectivism. The rise of science has been measured by the success of this subject-object divorce and abstraction resulting from that distance. In medicine however, there is an uncompromising demand for involvement of the physician with the patient - not only to offer emotional support, but to understand the broader contextual issues that so often play a crucial function in disease. The gulf between the growing technocratic advances and the maintenance of humane concerns continues to widen. The GPEP report is but one response to this schism. The ability of the physician to hide behind a technocratic mask is being denied by the renewed Oslerian ethos, and aside from the immense challenges of teaching such values, these must be a synthesis of two very different attitudes concerning subject-object relations.

How does one explore the possibility of synthesizing attitudes that appear as a figure of Janus - Osler and Welch - peering in opposite directions? It is an ideological issue with which the medical community has struggled for a century, and to which the 'solution' remains enigmatic. There are those who argue the matter was, and continues to be, addressed in the economic[7] and sociologic[8] arenas of a complex capitalist society, and that powerful political forces will ultimately dictate the parameters of operation. Undoubtedly medicine is subject to such pressure and must integrate its ideology within the larger cultural context. The loss of the physician's hegemony regarding health care decisions, eroded both by peer review of third party payers and dispersion of responsibilities within the health sector itself, are the manifestations of a physician whose status in society at large has fallen, and whose leadership in the immediate context of patient care has been reduced. There lingers a strong suspicion among today's physicians that the movement to humanize the physician reflects a general demand for his homogenization into society at large. Toppled from the pinnacle, he is again, as in the 19th century, to be regarded as a minister of health, not a demi-god, as preached to the Yale graduating class of 1898:

> You are going out . . . to a ministry - a ministry to which you cannot be worthy unless you hold it to be . . . a priesthood.[23] (quoted on p 282)

In both their public and private lives, 19th century physicians 'viewed themselves as physicians of both body and soul' (p 283)[23], and it was a scientific materialism that threatened the doctor with losing the perspective both of man's ethereal character and ultimate sanctity. We now, in more neutral terms, refer to man's dignity, feelings, holistic health and according to GPEP, recognize the physician's ethical and social responsibility for their preservation. 'We believe that every physician should be caring, compassionate, and dedicated to patients - to keeping them well and to helping them when they are ill' (p xi)[2]. Scientific training is to be balanced with humane concerns, and in fact these are emphasized. Man is no longer primarily viewed as only part of the animal kingdom, subject to the impersonal laws of chemistry and physics. The modern physician may be an expert relying on a modern biological perspective, but he must consciously maintain his humane responsibilities.

One might view this transformation as part of a radical politicalization of medicine, where exclusive authority has been wrestled from the doctor. More fundamentally it is a revolution in medical subject-object relations - the physician of the 21st century can no longer view the patient as an isolated object, but must consider him self-referentially; the ideal doctor now projects a set of personal concerns which must be incorporated into a complex set of value judgements beyond the objective scientific data. The physician as minister, ministering to the humane needs of the patient, has always been present and crucial to compassionate care, but the Oslerian face of Janus is now shining more brightly than when Flexner envisioned that 'science, once embraced, will conquer the whole' (p 161)[2]. We have witnessed the swing of the pendulum, where reliance on such a mentality is no longer adequate to meet the public's, or the profession's, expectations.

The question remains as to how well the 21st century physician will wear each face of Janus. Will there be a reaction against a science that has failed to deliver all of its promises? Will we be able to continue to attract physicians into biomedical research[24], and even of more concern, maintain the highest standards for admission to medical school[25]? Will there be a continued fall in physician's personal expectations, status and rewards as apart of that reaction[26,27]? Will the economic crisis in health care delivery yield reactionary constraints of scientific and technocratic applications[28]? Will medicine continue to function with an autonomy reserved for a privileged technocracy if health is perceived to reside less in its purview than previously surmised[29]? Will the GPEP report eventually be viewed as the watershed document that eroded the strong programme in scientific medicine, in place since the Flexner report and the establishment of medical schools dedicated to its ideals[30]? Can humanistic behaviour even be taught or are we caught in a more global and fundamental societal defect reflected in our interpersonal relations[31-33]?

Medicine requires eclectic talents, pluralistic purposes, multifaceted approaches to fulfil its mission. If the Flexner report teaches us anything, it is that we are subject to disguised cultural forces that have unforeseen effects on our expectations and best intentions. But those intentions are ever-changing and subject to the vicissitudes of the society at large, not to mention the hidden demands that become apparent only under altered conditions. As we seek more comprehensive solutions of how we might train the ideal future physician, let us not fall prey to

the hubris of our well-meaning forefathers, who so confidently bequeathed their own prejudices to us. Medicine's strength must reside in the potential for adaptation to new demands and challenges. The GPEP report clearly recognizes the impossibility of predicting the educational needs of students whose careers will be practised in the 21st century (p xiii)[2], and the report thus emphasizes the requirement that we train these physicians to maximize their independent learning (pp 10-14)[2]. But there is a disturbing proviso in the first paragraph of the report:

> [GPEP] *affirms that all physicians, regardless of specialty, require a common foundation of knowledge skills, values, and attitudes,* (p xi)[2]

The committee attempts to demand a fusion of the Janus image: the future physician 'should be caring, compassionate . . . committed to work, to learning, to rationality, to science, and to serving the greater society.' (p xi)[2] It is difficult, if not perverse, to oppose such an ethical position. But in spite of best intentions, we now risk imposing a new confining conformity. I would not offer relativism as the basis for measuring the current view of the ideal physician, however, the Flexner report illustrates the foibles of an absolute, monolithic approach to such a definition. The crux of the issue is then to maintain flexibility and latitude in establishing the criteria of the New Physician. Our basic concern must be to scrutinize the values even underlying the training of compassionate physicians.

Standards of excellence in each of the faces of Janus must be maintained. We must be vigilant, above all, to preserve the highest standards in each of medicine's diverse arenas, and beware of any rigidity in too explicitly defining our ideal. A common denominator is not our goal. The GPEP Committee would no doubt draw little criticism in advocating its idealized physician candidate, and we must strive to attain that persona. But is this new standard now to become the ruse by which we again impose a restricted model that limits our strength in diversity? There is a fine dialectic between the maintenance of standards and the crucial latitude of fostering diversity and originality. The Flexner report has already taught us the dangers of establishing a confining (and ultimately damaging) standard. The GPEP report appropriately broadens and alters that definition, but at the same time let us be wary of political correctness in different guises and guard against a potentially restrictive new order, for very likely, in 75 years, our professional progeny will condemn us for the same myopic mistakes Welch and Flexner committed in their well-meaning zeal.

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